

**Amendments to the Claims**

1. (canceled)
2. (canceled)
3. (previously presented) The apparatus of claim 27, wherein the reducing agent is chromous chloride.
4. (previously presented) The apparatus of claim 3, including means for introducing predetermined amounts of chromium powder and hydrochloric acid into the reaction chamber such that chromous chloride can be generated in the reaction chamber.
5. (previously presented) The apparatus of claim 27, further comprising a source of acid and means for introducing the acid into the reaction chamber prior to introduction of the reducing agent such that the amount of any volatile sulfur in the sample can also be measured.

Claims 6-21 (canceled)

22. (previously presented) A method of measuring the amount of reduced inorganic sulfur in a sample, the method including reacting a sample with a selective reducing agent that selectively converts the reduced inorganic sulfur in the sample to hydrogen sulfide but does not convert organic sulfur or sulfate material to hydrogen sulfide, and measuring the hydrogen sulfide evolved.
23. (canceled).
24. (previously presented) The method of claim 32, wherein the reducing agent is chromous chloride.
25. (previously presented) The method of claim 22, wherein the hydrogen sulfide evolved is measured by a measuring apparatus selected from the group consisting of an IR spectrometer, a gas chromatograph, a mass spectrometer, a turbidimetric analyzer, a gravimetric analyzer and an electrochemical gas analyzer.

26. (original) The method of claim 22, wherein the sample is selected from the group consisting of sediment, soil, sludge, petroleum, mine spoil, coal, oil, water, plant, animal or mineral material.

27. (previously presented) An apparatus for measuring the reduced inorganic sulfur content of a sample, the apparatus comprising a reaction chamber, means for introducing a selective reducing agent that can selectively convert the reduced inorganic sulfur of a sample in the reaction chamber to hydrogen sulfide, measuring means for measuring the amount of hydrogen sulfide evolved by reaction of the selective reducing agent with the sample, wherein the selective reducing agent is selected from the group consisting of Cr(II), Sn(II) and Hg(II).

28. (previously presented) The apparatus of claim 27, further comprising a reservoir for storing a reducing agent or precursor thereof.

29. (previously presented) The apparatus of claim 27, further comprising a detector for detecting when evolution of the hydrogen sulfide has reduced or ceased.

30. (previously presented) An apparatus for measuring the reduced inorganic sulfur content of a sample, the apparatus comprising a reaction chamber, means for introducing a selective reducing agent that can selectively convert the reduced inorganic sulfur of a sample in the reaction chamber to hydrogen sulfide, measuring means for measuring the amount of hydrogen sulfide evolved by reaction of the selective reducing agent with the sample, wherein the measuring means is selected from the group consisting of an IR spectrometer, a gas chromatograph, a mass spectrometer, a turbidimetric analyzer, a gravimetric analyzer and an electrochemical gas analyzer, and The apparatus of claim 1, further comprising a source of hydrochloric acid and means for introducing the acid into the reaction chamber prior to introduction of the reducing agent such that the amount of any acid volatile sulfur in the sample can also be measured.

31. (canceled)

32. (previously presented) A method of measuring the amount of reduced inorganic sulfur in a sample, the method including reacting a sample with a selective reducing agent that selectively converts the reduced inorganic sulfur in the sample to hydrogen sulfide, the reducing agent being selected from the group consisting of Cr(II), Sn(II) and Hg(II), and measuring the hydrogen sulfide evolved.

33. (previously presented) The method of claim 24, wherein the chromous chloride is generated in a reaction chamber by introducing predetermined amounts of chromium powder and hydrochloric acid into the reaction chamber.

34. (previously presented) The method of claim 22, wherein the evolved hydrogen sulfide is measured as a function of time.

35. (previously presented) The method of claim 22, wherein hydrochloric acid is mixed with the sample prior to mixing of the sample with the selective reducing agent whereby any acid volatile sulfur in the sample is reacted to evolve hydrogen sulfide and measuring the hydrogen sulfide.

36. (previously presented) The method of claim 22, wherein the evolved hydrogen sulfide is oxidized and the oxidized hydrogen sulfide is measured to determine the amount of reduced inorganic sulfur.

37. (new) A portable apparatus for in-field and laboratory measurement of reduced inorganic sulphur content of a sample comprising:  
a reaction chamber for receiving a sample to be analyzed;  
means for introducing a selective reducing agent that selectively converts the reduced inorganic sulfur of a sample in the reaction chamber to hydrogen sulfide;  
a measuring means for measuring the amount of hydrogen sulphide evolved by reaction of the selective reducing agent with the sample;  
said measuring means being selected from the group consisting of a colorimetric detector, a turbidimetric detector, a gravimetric detector, an electrochemical gas analyzer, a UV spectrometer and an IR spectrometer; and  
a conduit for supplying hydrogen sulphide evolved in the reaction chamber to the measuring means.

38. (new) The apparatus of claim 37, wherein the selective reducing agent is selected from the group consisting of Cr(II), Sn(II) and Hg(II).

39. (new) The apparatus of claim 38, wherein the selective reducing agent is acidified chromous chloride.

40. (new) The apparatus of claim 37, further comprising signaling means for signaling when evolution of hydrogen sulphide has reduced or ceased.

41. (new) The apparatus of claim 37, wherein the measuring means detects when evolution of hydrogen sulphide has reduced or ceased.

42. (new) The apparatus of claim 37, further comprising means for heating the reaction chamber.

43. (new) The apparatus of claim 42, further comprising heater control means for controlling operation of the heating means.

44. (new) The apparatus of claim 37, further comprising a condenser connected to the reaction chamber to cool gases leaving the reaction chamber and a source of cooling fluid for cooling the condenser.

45. (new) A portable apparatus for in-field and laboratory measurement of reduced inorganic sulphur content of a sample comprising:

- a reaction chamber for receiving a sample to be analyzed;

- means for introducing a precursor of a selective reducing agent that selectively converts the reduced inorganic sulfur of a sample in the reaction chamber to hydrogen sulfide;

- at least one reservoir for storing at least one reactant that reacts with the precursor to form the selective reducing agent, the at least one reservoir being connected to the reaction chamber by at least one transfer means for transferring the at least one reactant from the at least one reservoir to the reaction chamber;

- a measuring means for measuring the amount of hydrogen sulphide evolved by reaction of the selective reducing agent with the sample;

- said measuring means being selected from the group consisting of a colorimetric detector, a turbidimetric detector, a gravimetric detector, an electrochemical gas analyzer, a UV spectrometer and an IR spectrometer; and

- a conduit for supplying hydrogen sulphide evolved in the reaction chamber to the measuring means.

46. (new) The apparatus of claim 45, wherein the precursor is selected from the group consisting of Cr, Sn or Hg and the at least one reservoir comprises a reservoir for storing an acid.

47. (new) The apparatus of claim 46, further comprising another reservoir for storing ethanol.

48. (new) The apparatus of claim 45, wherein the reservoir is connected to the reaction chamber by a conduit and the apparatus includes a pump for causing the at least one reactant to flow through the conduit into the reaction chamber.

49. (new) The apparatus of claim 45, including a control unit for controlling the introduction of the at least one further reactant into the reaction chamber.

50. (new) The apparatus of claim 45, further comprising signaling means for signaling when evolution of hydrogen sulphide has reduced or ceased.

51. (new) The apparatus of claim 45, wherein the measuring means detects when evolution of hydrogen sulphide has reduced or ceased.

52. (new) The apparatus of claim 45, further comprising means for heating the reaction chamber.

53. (new) The apparatus of claim 52, further comprising heater control means for controlling operation of the heating means.

54. (new) The apparatus of claim 45, further comprising a condenser connected to the reaction chamber to cool gases leaving the reaction chamber and a source of cooling fluid for cooling the condenser.